

WHAT IS CLAIMED IS:

1. A system for manufacturing a polymer mat comprising:
at least one extruder;
at least one pump receiving an extruded polymer from the at least one extruder;
a plurality of spinning packs receiving the extruded polymer from the at least one pump,
each spinning pack having a plate with multiple orifices, wherein at least one
spinning pack of the plurality of spinning packs has a lesser number of orifices
than one or more of the remaining spinning packs;
a belt, the belt located below the plurality of spinning packs and positioned to receive a
plurality of polymer filaments created when the extruded polymer is passed
through the plurality of spinning packs; and
an entangling means receiving the plurality of polymer filaments from the belt, the
entangling means forming the plurality of polymer fibers into a mat.
2. The system of claim 1, wherein the at least one spinning pack of the plurality of spinning
packs having a lesser number of orifices is aligned with an outer lateral edge of the belt.
3. The system of claim 1, wherein the at least one spinning pack of the plurality of spinning
packs having a lesser number of orifices comprises a series of spinning packs having a
lesser number of orifices positioned as the laterally outermost spinning packs in a row of
spinning packs.
4. The system of claim 1, wherein the at least one spinning pack of the plurality of spinning
packs having a lesser number of orifices has about fifty percent or less as many orifices
as the remaining spinning packs.

5. A system for producing polymer fibers comprising:
 - at least one extruder;
 - at least one pump receiving an extruded polymer;
 - a plurality of spinning packs receiving a feed polymer from the at least one pump,
 - wherein each spinning pack contains a die with multiple orifices and at least one
 - first spinning pack of the plurality of spinning packs contains a die with a reduced
 - number of orifices as compared to at least one remaining second spinning pack of
 - the plurality of spinning packs.
6. The system of claim 5, wherein the polymer fibers are polyethylene fibers.
7. The system of claim 5, wherein each of the orifices of the at least one spinning pack comprises a bore having a first end to receive the feed polyethylene and a second end that outputs a filament, the first end having a diameter at least about 50% or more larger than a diameter of the second end.
8. A process for producing filaments for a mat comprising:
 - extruding a polymer;
 - passing the extruded polymer through a plurality of spinning packs each having a
 - plurality of orifices, the plurality of spinning packs located above a conveyor belt
 - and wherein a portion of the spinning packs located above a lateral outer edge of
 - the conveyor belt have a lower orifice density than the orifice density of the
 - spinning packs located above a central portion of the conveyor belt, whereby a
 - plurality of filaments are created;

receiving, by the conveyor belt, the plurality of filaments, wherein the number of filaments per unit area of the conveyor belt received at the outer lateral edge of the conveyor belt is less than the number of filaments per unit area of the conveyor belt received at a central portion of the conveyor belt.

9. The process of claim 8, wherein the extruded polymer is pumped through the spinning packs.
10. The process of claim 9, wherein a plurality of spinning pumps are associated with the plurality of spinning packs.
11. The process of claim 10, wherein the output of the portion of the spinning packs located above the lateral outer edge of the conveyor belt is less than the output of the spinning packs located above the central portion of the conveyor belt.
12. A system for producing a polymer fiber mat fabric, the system comprising:
 - at least one extruder, the extruder having a receiving chamber for receiving a plurality of polymer chips and an exit die;
 - at least one pump having an inlet and an outlet, the inlet receiving an extruded molten polymer after it has passed the exit die of the extruder;
 - a plurality of spinning packs, each of said spinning packs having a body and a die, wherein the body receives the extruded molten polymer and the extruded molten polymer is forced through the die by pressure from the at least one pump to form polymer filaments;
 - a conveyor belt on which the polymer filaments collect; and
 - an entangler bonding the polymer filaments into a mat.

13. A reduced capacity spinning pack for use in production of polymer filaments, the spinning pack comprising:

a block containing a series of flow channels;

a spinnerette aligned with the block, the spinnerette receiving a molten polymer from the flow channels in the block; and

a plurality of bores extending through the spinnerette, the bores arranged on less than about one half of the spinnerette to produce the polymer filaments from the molten polymer only through said less than about one half of the spinnerette where the bores are located.

14. The spinning pack of claim 13, wherein each of the plurality of bores has a first end to receive the molten polymer and a second end that outputs the polymer filament, the first end having a diameter at least about 50% or more larger than a diameter of the second end.

15. A polymer mat which comprises:

an array of non-woven thermoplastic fibers, wherein the fibers are entangled by;

a) extruding polymer filaments through a plurality of spinning packs containing orifices for deposition of the filaments on a conveyor belt, wherein at least two of the plurality of spinning packs located above outer lateral edges of the conveyor belt have fewer orifices than the spinning packs located above the center of the conveyor belt; and

b) needling the polymer filaments on the conveyor belt to create a mat.

16. A polymer mat which comprises:

an array of non-woven thermoplastic fibers, wherein the fibers are entangled by;

- a) extruding polymer filaments through a plurality of spinning packs containing orifices for deposition on a conveyor belt, wherein at least two of the plurality of spinning packs located above outer edges of the conveyor belt have fewer orifices than the spinning packs located above the center of the conveyor belt; and
- b) compressing the polymer filaments on the conveyor belt to create a mat.